



Background suppression sensor ML100-8-H-100-RT/103/115a



- Miniature design
- Small, sharp light spot
- Can be adapted to the application in question thanks to the adjustable detection range
- Precision object detection, almost irrespective of the color
- Full metal thread mounting

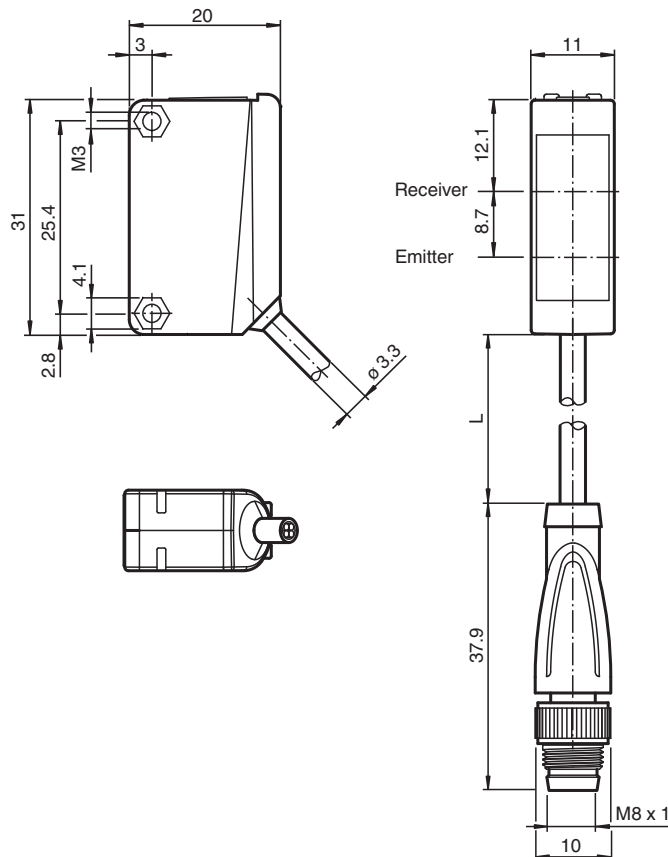
Triangulation sensor with background suppression, 100 mm adjustable sensing range, red light, light on, PNP output, 0.3 m fixed cable with M8 plug



Function

The optical sensors of this series are suitable for both standard and demanding applications. The series features a miniature housing design, two M3 metal-threaded mounting holes and a highly visible LED status indicator. Each device is equipped with a sensitivity adjuster and a light-on/dark-on changeover switch for increased flexibility. A wide variety of versions are available in both infrared light and red light with PowerBeam for easy alignment. Special versions with BlueBeam are suitable for challenging applications like those in the solar and battery industries.

Dimensions



Release date: 2023-04-04 Date of issue: 2023-04-04 Filename: 70105614_eng.pdf

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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Technical Data

General specifications

Detection range	5 ... 100 mm
Detection range min.	5 ... 25 mm
Detection range max.	5 ... 100 mm
Adjustment range	25 ... 100 mm
Reference target	standard white, 100 mm x 100 mm
Light source	LED
Light type	modulated visible red light
Polarization filter	no
Black-white difference (6 %/90 %)	< 20 %
Diameter of the light spot	approx. 4 mm at a distance of 100 mm
Opening angle	approx. 2.5 °
Optical face	frontal
Ambient light limit	EN 60947-5-2

Functional safety related parameters

MTTF _d	860 a
Mission Time (T _M)	20 a
Diagnostic Coverage (DC)	0 %

Indicators/operating means

Operation indicator	LED green: power on
Function indicator	LED yellow: lights when object is detected
Control elements	Sensing range adjuster
Control elements	Light-on/dark-on changeover switch

Electrical specifications

Operating voltage	U _B	10 ... 30 V DC
Ripple		max. 10 %
No-load supply current	I ₀	< 15 mA

Output

Switching type		The switching type of the sensor is adjustable. The default setting is: light-on
Signal output		1 PNP output, short-circuit protected, reverse polarity protected, open collector
Switching voltage		max. 30 V DC
Switching current		max. 100 mA , resistive load
Voltage drop	U _d	≤ 1.5 V DC
Switching frequency	f	1000 Hz
Response time		0.5 ms

Conformity

Product standard	EN 60947-5-2
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Approvals and certificates

UL approval	cULus Listed, Class 2 Power Source or listed Power Supply with a limited voltage output with (maybe integrated) fuse (max. 3.3 A according UL248), Type 1 enclosure
CCC approval	CCC approval / marking not required for products rated ≤36 V

Ambient conditions

Ambient temperature	-30 ... 60 °C (-22 ... 140 °F)
Storage temperature	-40 ... 70 °C (-40 ... 158 °F)

Mechanical specifications

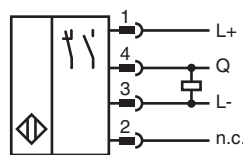
Housing width	11 mm
Housing height	31 mm
Housing depth	20 mm
Degree of protection	IP67
Connection	300 mm fixed cable with 4-pin, M8 x 1 connector
Material	
Housing	PC (Polycarbonate)
Optical face	PMMA

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Mass	approx. 20 g
Tightening torque, fastening screws	0.6 Nm
Cable length	0.3 m

Connection



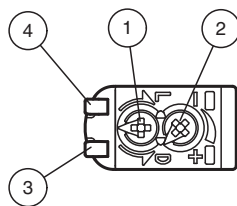
Connection Assignment



Wire colors in accordance with EN 60947-5-2

1	BN	(brown)
2	WH	(white)
3	BU	(blue)
4	BK	(black)

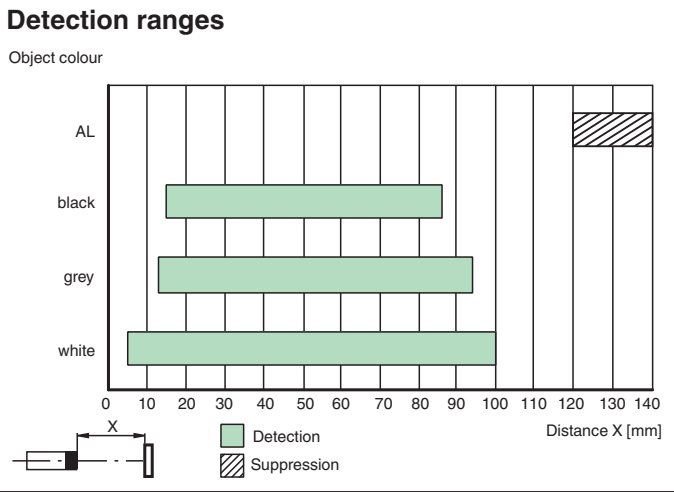
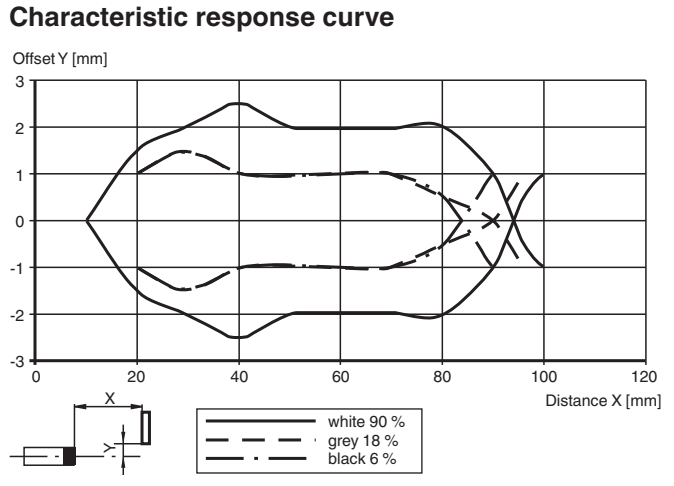
Assembly











1	Light-Dark-switching	
2	Sensitivity adjuster	
3	Signal display	yellow
4	Operating display	green

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Characteristic Curve




Accessories

	OMH-ML100-09	Mounting aid for round steel \varnothing 12 mm or sheet 1.5 mm ... 3 mm
	OMH-ML100-01	Mounting aid for ML100 series, mounting bracket
	OMH-ML100-02	Mounting aid for ML100 series, mounting bracket
	OMH-ML100-03	Mounting aid for round steel \varnothing 12 mm or sheet 1.5 mm ... 3 mm
	OMH-ML100-04	Mounting aid for ML100 series, mounting bracket
	OMH-ML100-05	Mounting aid for ML100 series, mounting bracket
	OMH-F10-ML100	Mounting aid for ML100 series
	OMH-10	Mounting aid for ML100 series

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

Accessories

	OMH-ML100-S1	Mounting bracket
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System Description

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The triangulation sensor with background suppression (BGS) contains both an emitter and a receiver in a single housing. Targeted blanking of objects outside the scanning range is made possible by a corresponding angle arrangement between emitter and receiver (2 receiver elements). The triangulation sensor (BGS) detects objects regardless of their surface structure, brightness and color, as well as the brightness of the background.

Mounting

The sensors can be mounted directly with fixing screws or by using a mounting bracket. Mounting brackets are available as accessories.

Ensure that the surface is flat to avoid housing distortion during mounting and fixing.

Secure nut and bolt with spring washers to prevent misalignment of the sensor.

Adjusting the Sensor: Apply the operating voltage to the sensor. The power indicator lights green.

Adjust the sensor to the background.

Yellow signal indicator permanently lights up: Use the sensing range adjuster to adjust the sensor to correct sensing range. Once the correct sensing range is set, the yellow signal indicator goes out.

Commissioning

Check Object Detection: Check as follows if the sensor detects objects as intended.

Position the object in the required sensing range of the sensor and align the light spot towards the object.

The yellow signal indicator is off. The indicator lights up only when the object is detected.

Troubleshooting: If the sensor does not respond as expected, change the sensing range setting until the signal indicator lights up during object detection.

Maintenance

Cleaning: Clean the optical surface of the sensor at regular intervals.

Servicing: Check the mounting screw connections and the electrical connections regularly.